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MASTER OF MILITARY STUDIES

DEVELOPING THE AIR COMMAND AND CONTROL GENERALIST

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ABSTRACT (MAXIMUM 200 WORDS) Under current policies unrestricted officers in the Air Control/Air Support/Anti-air Warfare field (Occupational Field 72) are designated Air Command and Control Officers upon promotion to Major. This designation is based solely on promotion and there is no requirement for advanced training or previous experience in multiple specialties. This community would benefit by providing training to these officers prior to promotion to Major in order to ensure that they have broader knowledge in the employment of the Marine Air Command and Control System (MACCS) as a whole.					
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EXECUTIVE SUMMARY

Title: DEVELOPING THE AIR COMMAND AND CONTROL GENERALIST

Author: Major Salvador E. Cepeda, U.S. Marine Corps

Thesis: Marine Air Command and Control Officers require training and development in order to become more effective as generalists.

Discussion: Under current policies unrestricted officers in the Air Control/Air Support/Anti-air Warfare field (Occupational Field 72) are designated Air Command and Control Officers upon promotion to Major. They are then considered generalists who can be assigned to any air command and control billet. This designation is based solely on promotion and there is no requirement for advanced training or previous experience in multiple specialties.

The need for generalists at the senior level has been long recognized and this community has been wrestling with how to best develop a generalist for many years. Future initiatives, including the fielding of a common air command and control system (CAC2S) and the proposed restructuring of units into cross-functional battalions and squadrons, further validate the requirement for generalist officers.

Recommendations: In the interim, officers should continue to be trained in specialized military occupational specialties (MOS's) at entry level because their initial responsibilities center on systems and procedures. At the senior Captain level they should attend an advanced Air Command and Control course in order to gain an understanding of the Marine Air Command and Control System (MACCS) as a whole, how to employ it, and its role in joint and combined operations. Ideally, this will be followed by a tour in a different agency. This will result in officers with broader knowledge who are equipped to perform effectively as generalists.

Once units are restructured and common systems are fielded, a migration to a single MACCS MOS beginning at entry level should be evaluated.

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1. Introduction

In 1994 the Marine Corps implemented a change in the unrestricted officer Air Control/Air Support/Anti-air Warfare Occupational Field (OccFld). Specifically, the Military Occupational Specialties (MOS's) of Surface-to-Air Weapons Officer (7204), Air Support Control Officer (7208), Air Defense Control Officer (7210), and Air Traffic Control Officer (7220) were to merge at the grade of Major to create MOS 7202, Air Command and Control Officer.¹ This officer was now considered a generalist in the air command and control community, capable of serving in a variety of billets relating to everything from airspace control to employment of ground based air defense units.

Prior to this change officers retained their primary MOS's through the grade of Lieutenant Colonel. Under the old system a commander could expect an officer holding a particular MOS to have an appropriate level of experience and skills related to the Marine Air Command and Control System (MACCS) agency of his assigned unit.

¹ U.S. Marine Corps Order (MCO) P1200.7W, *Military Occupational Specialties (MOS) Manual* (Washington, DC: Department of the Navy, 2001). Cited hereafter as MOS Manual.

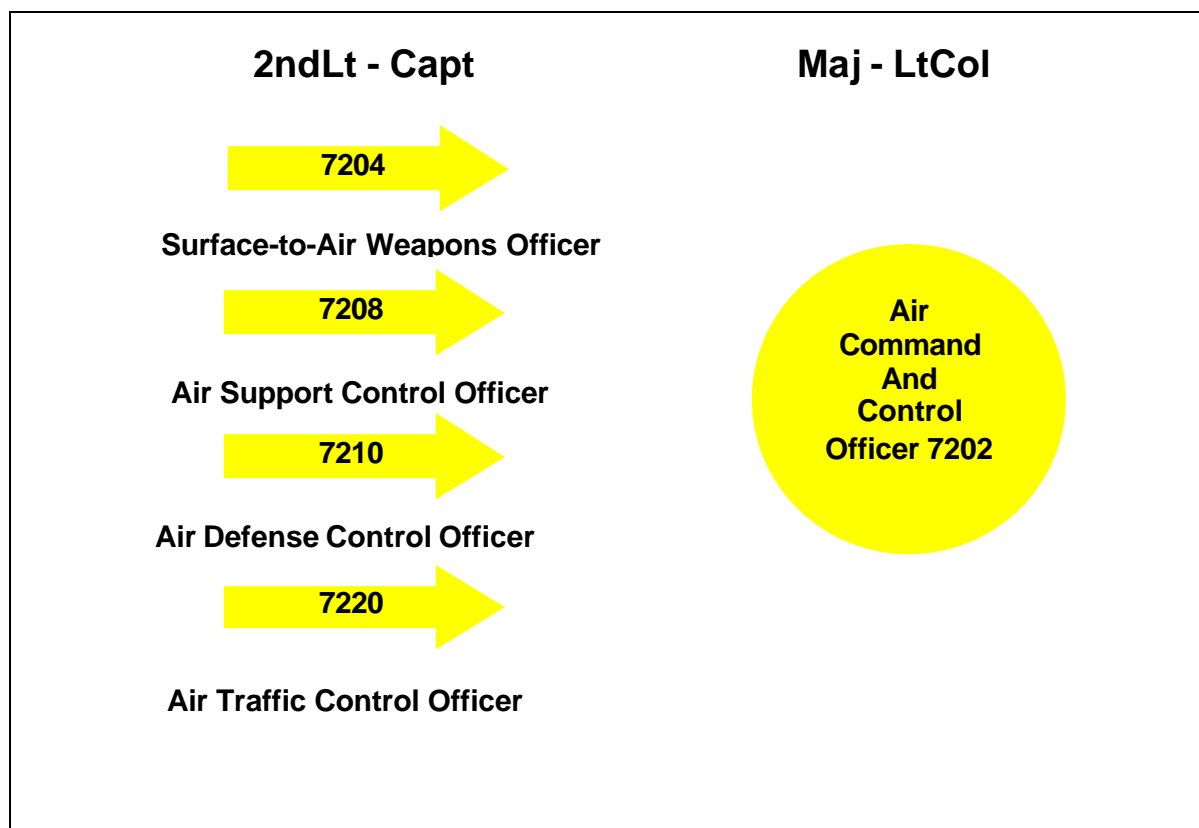


Figure 1.²

This author will study the rationale behind this merger, its impact on the air command and control community, and possible training and development measures which can be implemented to create a better qualified air command and control generalist.

Although it has been the topic of much debate, this attempt at generalization is not new; the air command and control community has undergone many changes over the years

² Draft, *The Marine Air Command and Control System and Expeditionary Maneuver Warfare, Part Three: People, Organization, and Training* (Washington, DC: Headquarters, U.S. Marine Corps, Aviation Department). 7.

attempting to effectively develop its officers. Ongoing reviews of how the Marine Corps will fight in the future, particularly within the scope of its warfighting philosophy of Expeditionary Maneuver Warfare (EMW), coupled with future systems acquisitions, mandate significant changes in how the air command and control community is organized, staffed, and trained. In order to better comprehend the nature of this change, it is important to look at the current structure of the MACCS as well as the historical evolution of the MOS.

2. Current Organizational Structure

The MACCS is organized around tactical agencies and activities, each having a different function and task. These agencies are established by squadrons and battalions within the Marine Air Control Group (MACG) of the Marine Aircraft Wing (MAW). Each MAW contains one MACG. The MACG has been reorganized several times throughout the years.³ Figure (2) illustrates the current structure along with the officer MOS's assigned.

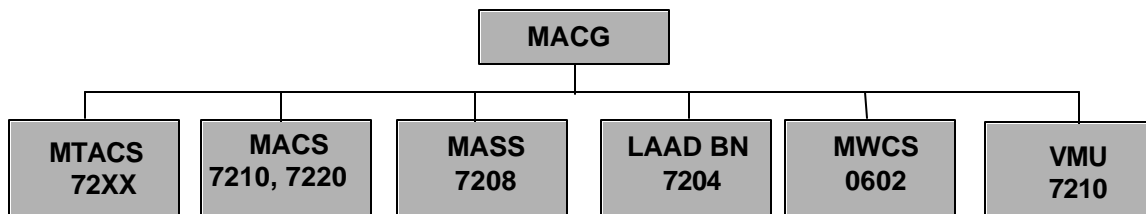


Figure 2.

Marine Tactical Air Command Squadron (MTACS) is staffed with officers from all MACCS MOS's. Their mission is to establish and operate the Tactical Air Command Center (TACC), which is the senior agency of the MACCS. It provides the facilities for the Aviation Combat Element (ACE) commander and his battlestaff to command, supervise, and direct air

³ Major John R. Wilkerson, USMC, *Restructuring the Marine Air Control Group for the 21st Century* (Quantico, VA: Marine Corps Command and Staff College, 1996) 12-36.

operations. Other Services' comparable agencies include the Air Force's Air Operations Center and the Navy's Tactical Air Control Center.⁴

Marine Air Control Squadron (MACS) is staffed by Air Defense Control Officers (7210) and Air Traffic Control Officers (7220). They employ the Tactical Air Operations Center (TAOC), which is responsible for airspace control and management. It detects, identifies, and controls the intercept of hostile aircraft and missiles and provides navigational assistance to friendly aircraft. The TAOC provides real-time surveillance of assigned airspace and performs real-time direction and control of anti-air warfare operations involving aircraft and surface-to-air weapons. By collecting and displaying information from its own sensors, other Marine Corps sources, and external sources, the TAOC controls assigned airspace and directs and controls the fires of assigned air defense assets.⁵

Also organic to the MACS is the Marine Air Traffic Control Detachment (MATCD). It is the primary terminal air traffic control organization within the MACCS. It is organized and equipped to satisfy the air traffic control requirements for forward operating bases. The MATCD provides friendly aircraft

⁴ U.S. Marine Corps Warfighting Publication (MCWP) 3-25.3, *Marine Air Command and Control System Handbook* (Washington, DC: Department of the Navy, December 1997), 2-1.

⁵ Ibid, 2-16.

with continuous all-weather radar approach, departure, and en route air traffic control services within assigned controlled airspace. It serves as the operational point of contact between the MACCS and national/international civil air traffic control agencies.⁶

Marine Air Support Squadron (MASS) is staffed by Air Support Control Officers (7208), who operate the Direct Air Support Center (DASC). The DASC is the principal air control agency responsible for the direction of air operations that directly support ground forces. It processes immediate air support requests, coordinates aircraft employment with other supporting arms, manages terminal control assets that support ground combat and combat service support forces, and controls assigned aircraft transiting its area of responsibility.⁷

Low Altitude Air Defense Battalion (LAAD Bn) is staffed by Low Altitude Air Defense Officers (7204). Its mission is to provide close-in, low altitude, surface-to-air weapons fires in defense of forward combat elements, vital areas, and installations. It also provides surface-to-air weapons support for units engaged in special/independent operations.⁸ The battalion is organized into two Firing Batteries and a Headquarters and Service Battery. Batteries consist of three

⁶ Ibid, 2-19.

⁷ Ibid, 2-7.

⁸ Ibid, 2-23.

Platoons made up of three Sections. Sections consist of five two-man Teams.

The LAAD battalion employs the Stinger missile system. Stinger is capable of engaging and destroying low flying fixed and rotary-wing aircraft and reconnaissance drones. Stinger is employed in two versions: a man-portable air defense system and a pedestal-mounted vehicular version (Avenger).⁹

Marine Wing Communications Squadron (MWCS) is staffed by Communications/Information Systems Officers (0602). Although it is not an air command and control agency, the squadron provides the backbone for ACE communications. It is responsible for the installation, maintenance, and operation of communications systems that provide connectivity among the MACCS elements and between the MAW and higher and adjacent units. Additionally, it provides the ACE commander with the means to direct the efforts of his subordinate commanders.¹⁰

Marine Unmanned Aerial Vehicle Squadron (VMU) is staffed by Air Defense Control Officers (7210) as well as Naval Aviators (75XX). Their mission is to operate and maintain an unmanned aerial vehicle (UAV) system to provide unmanned aerial reconnaissance support to the Marine Air Ground Task Force (MAGTF). They provide airborne reconnaissance to assist in intelligence preparation of the battlefield, provide early

indications and warning of enemy attack, assess targets both pre and post-strike for battle damage assessment, and adjust indirect fire support weapons such as artillery and naval gunfire. This is accomplished with the Pioneer Unmanned Aerial Vehicle.¹¹

⁹ Ibid.

¹⁰ Ibid, 2-20.

¹¹ Table of Organization Number 8890, *Marine Unmanned Aerial Vehicle Squadron (VMU), Marine Aircraft Group, Marine Aircraft Wing, Fleet Marine Force* (Washington, DC: Headquarters United States Marine Corps, 17 May 1996).

3. Historical Evolution

Air Control

The (MACCS) developed over a period of time as the need to coordinate Marine aviation became increasingly more critical and complex. Technology and combat necessity were the forces that shaped the system. As early as the 1920s Marines were experimenting with different ways of communicating with aircraft in order to guide them towards intended targets or assist them in landing safely.¹²

During World War I Marine aviators relied on pre-briefed missions and hand and arm signals to conduct their missions, which consisted mostly of observation and limited bombing raids. There were even a few instances of uncoordinated air support of ground troops, when Marine aviators dropped 25-pound bombs by hand onto German positions just a few hundred feet from friendly lines.¹³

The first known instance of close air support (CAS) - an air attack being directed by ground troops - occurred in Nicaragua in 1927 when a small Marine patrol was besieged by 175 enemy troops. They requested air support by laying out

¹² Robert Sherrod, *History of Marine Corps Aviation in World War II* (San Rafael, CA: Presidio Press, 1980), 26-29.

¹³ Captain Thomas J. Burnam, USMC, *The Evolution and Duties of a Tactical Air Control Group* (Quantico, VA: Amphibious Warfare School, 7th Class, 1948-49), 4.

signal panels indicating the direction and range of the enemy. The subsequent bombing and strafing relieved pressure on the patrol.¹⁴

The next major development was the emergence of short wave radio in 1931, allowing pilots to communicate with each other as well as with units on the ground.¹⁵ Throughout the 1930's and World War II, control procedures for close air support continued to be refined.¹⁶

It wasn't until World War II that units were specifically dedicated to air control on a full-time basis. Marine aircraft first conducted Ground Control Intercept (GCI) of hostile aircraft using the newly developed radars of the Navy. Ashore, Marine forces began developing procedures and methods for coordinating the employment of antiaircraft guns against hostile aircraft with Marine fighter and close air support aircraft. The control procedures developed during World War II, with little revision, were used in the Korean War.¹⁷

Initially, radar was employed in the Marine night fighter squadrons. The possibility of intercepting enemy aircraft at night by means of radar had been brought into sharp military focus during the blitz of London. Here was a new, highly complex operation which involved not only the aircraft and its crew but

¹⁴ Sherrod, 26.

¹⁵ Sherrod, 29.

¹⁶ Lieutenant Colonel Joseph E. Noble, USMC, *Information Flow Analysis of the Marine Air Command and Control System* (Ft. Leavenworth: U.S. Army Command and General Staff College, 1988), 2.

also the controller on the ground whose task it was to direct the airmen by means of radar to an intercept point where the plane's own radar could seek out the foe so its guns could shoot him down. Daytime control officers who vectored day fighters to the vicinity of the enemy were important, but the primary responsibility for interception lay with the pilots themselves. For night work a controller was required whose skills had to be as decisive as that of the man flying the plane.¹⁸

In 1942 the Marine Corps turned to the British Royal Air Force (RAF) for help in training a cadre of Marines in all aspects of their radar systems and air-to-air intercept tactics. This group consisted of five aviators, three ground officers and five enlisted Marines. Upon completion of training, they proceeded to Marine Corps Air Station Cherry Point to train the Marines of VMF (N)-531 for deployment to the South Pacific as the pioneer night fighter squadron.¹⁹

In order to better coordinate the air defense battle, the GCI controllers of the night fighter squadrons were reorganized to form Marine Air Warning Squadrons in late 1943.²⁰ Along with the Landing Force Air Support Control Units (LFASCUs), who were organized to operate with ground forces in

¹⁷ Ibid.

¹⁸ Sherrod, 158.

¹⁹ Brigadier General Homer G. Hutchinson, USMC, "Early Night Fighters in Marine Corps Aviation: A Part of the Beginnings," *Marine Corps Gazette* (May 1993), 68-72.

order to coordinate air support ashore, these were the first units tasked specifically with the mission of air control and evolved into what today is the MACCS.²¹

Air Traffic Control also developed extensively during World War II, particularly with the development of high-precision ground-controlled approach (GCA) radar.²²

Although this emerged from production rather late in the war, it was used with success in the Pacific theater. This would be a far cry from the old system in place at the beginning of the war, when tall wooden towers manned by controllers armed with binoculars and radios were established at Pacific airfields to control the approach and departure of friendly aircraft. With GCA and search radar, Marine air traffic control would evolve and eventually become part of the present MACCS. . .²³

During this period the officers assigned to duties involving control of aircraft were typically Naval Aviators assigned on a temporary basis. There was no full-time unrestricted MOS for this function and officers were routinely moved in and out of these units as the needs of the Marine Corps required.

²⁰ Marine Air Control Squadron 1, History and Lineage, U.S. Marine Corps Historical Division.

²¹ Lieutenant Colonel Richard J. Martin, *The Marine Air Command and Control System: An Historical Perspective* (Maxwell Air Force Base: Air War College, 1994), 12.

²² Ibid, 14.

²³ Ibid.

Until 1942 the officers' ground duties in Marine Corps Aviation were performed by Naval Aviators. But with the rapid expansion of aviation and the increasing complexity of its activities, it was soon apparent that some method must be worked out to procure officers who could carry out the various specialized ground duties and release the pilots for flight duty. Since it was not possible to spare such officers from other activities in the Marine Corps, a procurement program was set up to obtain men of experience, judgment and accomplishment from civilian life. This new activity was known as the AVS (Aviation Volunteer Specialist) program and the first class of AVS officers entered the Reserve Officer School at Quantico on 15 June, 1942.²⁴

In February of 1944, an Aviation Ground Officers' School (AGOS) was activated and charged with the basic training of all officers assigned to Marine Corps Aviation for ground duties. Students included the probationary Second Lieutenants obtained from civilian life, officers commissioned from the ranks of Marine aviation, transfers from other activities, and pilots whose flight orders were no longer in effect.²⁵

²⁴ *Notes on U.S. Marine Corps Aviation* (NAVMC 3635) (Quantico, VA: Marine Corps Schools, Marine Barracks, 1944), 31.

²⁵ *Ibid.*

Ground Based Air Defense

The arrival of the airplane on the battlefield brought about the immediate development of ground based air defenses to counter it. In the Marine Corps, this task fell to the field artillery, who attempted to shoot down the first balloons and biplanes with cannons and later machine guns.²⁶

Between the World Wars the Marine Corps organized and equipped several Antiaircraft Regiments employing cannons and machine guns of different caliber as well as searchlights and listening devices. During this period Antiaircraft Artillery became a primary MOS under the Field Artillery OccFld (11). Officers were designated as either Light or Heavy Antiaircraft Artillery Officers and, if qualified in both, simply as Antiaircraft Artillery Officers.²⁷

During World War II the Marine Corps organized Defense Battalions, whose mission was to defend advanced naval bases against ships and air attack. They were equipped with 90mm AA guns, 40mm cannon, 20mm guns, and .50 caliber machine guns. For target detection, they employed searchlights and later, radar.²⁸

By the end of the war antiaircraft artillery had become very effective. In fact, ground based air defense units

²⁶ James D. Crabtree, *On Air Defense* (Connecticut: Praeger, 1994), 2.

²⁷ MOS Manual, 1945.

killed more enemy aircraft than fighters did.²⁹ By approximately 1949, Antiaircraft Artillery became a separate OccFld (07) in the Marine Corps.³⁰

Further Development

The 1950's and 60's brought about major developments in aviation command and control and anti-air warfare. The development of a semi-automated air control system, the Marine Tactical Data System (MTDS), allowed for the rapid transmission of information between compatible Navy and Marine units in real-time or near real-time fashion.³¹

The introduction of surface-to-air missiles in the mid-fifties saw antiaircraft artillery battalions evolve into antiaircraft missile battalions. These were established first in Force Troops, then incorporated into the wing structure under the Marine Air Control Group (MACG).³² The purpose of transitioning these units from ground combat to Marine aviation was to integrate the entire air defense effort under the wing - fighters and surface-to-air missiles with the MACCS as the agency in charge of the overall air defense effort.³³

²⁸ Major Mark A. King, USMC, *The Hunt for Adequate Protection: Ground-Based Air Defense in the USMC*, (Quantico, VA: Marine Corps Command and Staff College, April 1995), 5.

²⁹ Major King, 6.

³⁰ MOS Manual, 1949.

³¹ Lieutenant Colonel Martin, 25.

³² Lieutenant Colonel Martin, 25.

³³ Major King, 7.

In 1957 an officer at the Junior School wrote a research paper advocating this move primarily because keeping them separate violated the principle of unity of command.³⁴

In 1954, during this period of rapid development in aviation, communications, and missile technology, the Marine Corps Air Control System - what would evolve into today's MACCS - was introduced.³⁵ In the early 1960's, due to the growing complexity of the system, and to a lesser extent, the shortage of pilots (who were still tasked with staffing air control units), air control was authorized as a primary MOS for unrestricted officers. Prior to that, the air control field, then OccFld 67, was manned by restricted officers - warrant officers, limited duty officers (LDOs), and reserve officers below the grade of Captain - who would have to qualify in an authorized primary MOS in order to progress in their careers.³⁶

At this time Antiaircraft Artillery, OccFld 07, was absorbed into OccFld 67. These officers became Anti-Air Warfare Officers, MOS 6704 under the new OccFld.³⁷

³⁴ Major G. D. McPherson, USMC, *The Transfer of Certain Marine Corps Antiaircraft Units from Force Troops to Force Aviation* (Quantico, VA: The Junior School, Marine Corps Educational Center, Marine Corps Schools, 19 March 1957), 4.

³⁵ U.S. Marine Corps Landing Force Bulletin No. 9, (Washington, DC: Department of the Navy, 12 May 1954).

³⁶ Colonel Robert Gibson, USMC (Ret.), telephone interview by the author, 3 December 2001.

³⁷ Antiaircraft Artillery was already an authorized primary MOS for unrestricted officers.

Restricted officers, who had traditionally been the training experts and provided the continuity to the community, were retained.

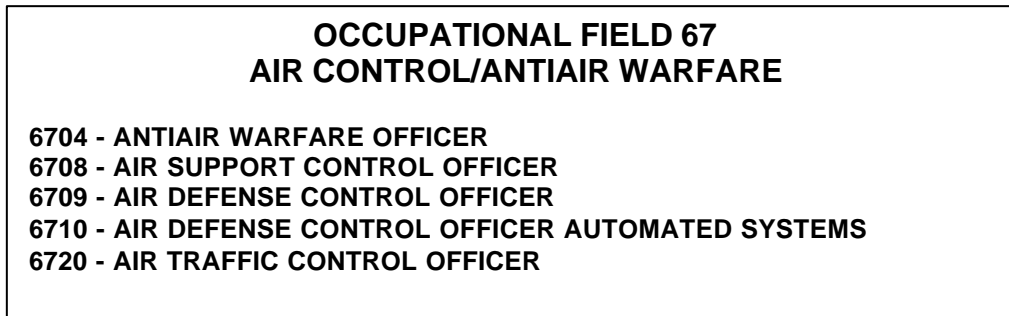


Figure 3.

While Naval Aviators continued to lead many MACCS units, the new unrestricted air control officers began to gain experience and promotions and gradually started taking command of the air control units in the late 1960's.³⁸

Generalists

It was recognized early on that MACCS officers would need to become generalists and understand the employment of the MACCS as an integrated system. Throughout the 1950's and early 1960's Marine Gunners³⁹ with extensive experience were designated 6702, Air Control Officer. They were to "direct and coordinate air support missions and day and night interceptions of hostile aircraft."⁴⁰ This was the first attempt to make a generalist within the OccFld, even though

³⁸ Colonel Gibson.

³⁹ Chief Warrant Officer whose duties are of a tactical nature. Currently, only the infantry field has Gunners.

there were only restricted officers serving in it.⁴¹ After the MOS was opened to unrestricted officers, the 6702 designation was discontinued for restricted officers and was reserved for senior officers. This MOS was to be the apex of the OccFld. This officer was required to manage and supervise the many diverse and sophisticated elements of the MACCS. Tables of Organization throughout the 60's and early 70's called for 6702's in all MACCS field grade billets.⁴²

One of the driving forces that validated the requirement for generalists was the adoption of the Counter Air Operations Center (CAOC), where air controllers and ground based air defense officers worked side by side in order to improve engagement effectiveness by managing all anti-air warfare (AAW) functions from a central facility.⁴³

There was no formal training for air control generalists. The requirement established for awarding the 6702 MOS was qualification in one or more MACCS MOS's.⁴⁴ For example, in 1966 the assignments monitor ordered the majority of air defense control officers to HAWK⁴⁵ school for cross-training as surface-to-air weapons officers.⁴⁶

⁴⁰ MOS Manual, 1954.

⁴¹ Ibid.

⁴² Various Tables of Organization (T/O's) dated 1965 - 1971.

⁴³ Colonel Gibson.

⁴⁴ Colonel Bill Spiegths, USMC (Ret.), E-mail to the author on 16 Jan 2002.

⁴⁵ The HAWK missile system was employed by Marines of the Light Antiaircraft Missile (LAAM) Battalions from 1959 to 1997.

⁴⁶ Colonel Gibson.

In 1972, the Commandant of the Marine Corps (CMC) recognized and approved the requirement to establish a formal course for 6702 officers. The intent was to "bridge the gap" in experience and knowledge by providing training to all 67XX officers by the time they reached the grade of Major or shortly thereafter.⁴⁷

The course was never fully developed, and in the early 1970's the 6702 MOS was discontinued. This was due primarily to continued "stovepiping" in assignments. Officers were simply attending the secondary MOS schools for career enhancement, but generally continued serving in their original type units.⁴⁸

In 1975 OccFld 67 was split up into the current OccFld 72 (Air Control/Air Support/Anti-air Warfare) and OccFld 73 (Air Traffic Control and Enlisted Flight Crews). Women were authorized to serve in Air Traffic Control only because the other fields were considered combat specialties.⁴⁹ This policy was changed the following year and women have been serving in

⁴⁷ Major Mitchell Steinberg, USMC, *Formal Training for the Air Control/Anti-air Warfare (AC/AAW) Officer, MOS 6702* (Quantico, VA: Marine Corps Command and Staff College, 1973), C-1.

⁴⁸ Colonel Larry Groves, USMC (Ret.), telephone interview by the author, 29 Nov 2001.

⁴⁹ U.S. Marine Corps News Release No. BAM-8-75, (Washington, DC: Historical Division, Headquarters, U.S. Marine Corps, 9 January 1975).

all but the 7204 MOS since then.⁵⁰ The air traffic control MOS was re-established within the 7200 field in the 1994.⁵¹

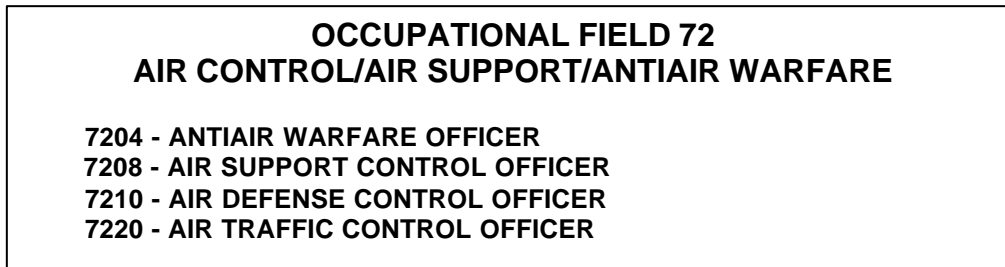


Figure 4.

In 1997, with the final divestiture of HAWK, an attempt was made to merge 7208 and 7204 at entry level. Second Lieutenants were trained in both specialties, attending the Air Support Control Officers Course (ASCO) at Twenty-nine Palms, CA, followed by the LAAD Officers Course at Ft. Bliss, TX. Upon reporting to the Fleet Marine Force (FMF) they were assigned to either a MASS or a LAAD Bn. This system proved to be problematic and there was not much benefit gained from it. During October, 1999, the MACG Operational Advisory Group (OAG) recommended re-establishment of 7204 as a separate MOS due to the divergent skill sets required of officers filling operational billets in both LAAD Bn's and MASS.

⁵⁰ *A History of the Women Marines, 1946-1977* (Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1986), 209. In 1995 women were trained as 7204's and served in the LAAM Bn's until their deactivation.

⁵¹ Major Rod Burnett, USMC, 7220 OccFld Sponsor, telephone interview by the author on 5 Feb 2002.

Operationally, there was an inability to develop MOS proficiency in both skills during an initial 3-year FMF tour.⁵²

Mentoring

From the time the OccFld became unrestricted, leaders have attempted to develop generalists by mentoring their junior officers and ensuring that they received cross-training in multiple MACCS specialties. This included re-assignment to another squadron and on-the-job training, as well as formal training in a secondary MOS within the air control field. This was common practice throughout the 1970's and 1980's as it was generally assumed that an officer would attend at least two MOS producing schools.⁵³ In fact, most of the senior field grade officers serving today have training or experience in at least two MACCS MOS's.⁵⁴

Formal cross-training continues today but at a much lesser rate primarily due to fiscal constraints. Some Group Commanders have aggressively encouraged on-the-job (OJT) cross-training by ensuring that their officers serve in multiple units during tours in the MACG. However, this is not

⁵² Headquarters, Marine Corps Routing Sheet dated 10 August 2000, Subject: Establishment of the MOS 7204, Low Altitude Air Defense Officer.

⁵³ Colonel Robert Dodt, USMC, interview by the author, 13 Nov 2001. Colonel Gibson.

⁵⁴ Colonel John Garvin, USMC, interview by the author on 19 Nov 2001. Interviews with Cols Dodt, & Groves. Command Biographies of MACCS Commanders, (Washington, DC: U.S. Marine Corps Historical Division).

a requirement and operational requirements often out-weigh the need to develop an individual officer.

The introduction of the 7202 MOS in 1994 once again formalized the generalist concept, but offered no training nor prerequisite experience in order for an officer to be awarded the MOS. An officer simply received the 7202 designation upon promotion to Major.

4. The Merger

While operationally it was long recognized that a senior officer in the MACCS would need to become a generalist, the decision to re-introduce the MOS was largely influenced by manpower concerns. Between 1987 and 1989 planners at Headquarters, Marine Corps (HQMC) Aviation Plans, C2 (APC) studied ways to gain efficiencies based on planned force reduction initiatives. Personnel boat spaces within aviation was a major concern. One of the primary reasons for the merger was the anticipated impact of the possible divestiture of HAWK and the restructuring of air traffic control.⁵⁵

From a manpower management perspective the divestiture of HAWK caused a serious problem by producing a requirements imbalance. The grade "pyramid"⁵⁶ was becoming more inverted, with specific company grade MOS's not being able to support field grade requirements.⁵⁷

There would be personnel management benefits gained by merging four relatively small MOS's into a larger one at the field grade level. Assignments, particularly to joint and external billets requiring air command and control experience, would become much easier to manage. Additionally, a single,

⁵⁵ Colonel Garvin.

⁵⁶ This refers to the need for progressively fewer requirements for officers of higher grades in an MOS.

⁵⁷ Lieutenant Colonel Martin Musella, USMC (Ret.), telephone interview by the author, 3 December 2001.

larger MOS would be better represented on selection boards and in the command slating process.⁵⁸

The 7202 merger was implemented in 1994 and although there were plans for formal schooling, none were implemented.⁵⁹ The interchangeable assignment of these new 7202 officers began immediately - with no training other than whatever the individual officer had gained through experience in the operating forces.

While many officers in the MACCS community were challenged by assignments to units that they did not originate from, the overwhelming majority adapted, learned, and effectively employed their units. One of the key arguments in this debate is that a field grade officer will not be required to know the details of employing the unit and that his job is to be concerned with the leadership functions. While it is true that the great majority of the time a field grade officer serving as either Commanding Officer, Executive Officer, or Operations Officer will be busy with routine tasks inherent to any Marine unit, this view does not take into account certain important issues.

First, the experience brought to a unit by the commander and his senior officers is invaluable. Recurring operational

⁵⁸ Mrs. Cynthia Cheeks, Operation Officer, Total Force Structure Division (TFSD), interview by the author, 2 November 2001.

⁵⁹ Colonel Garvin.

issues, training, maintenance, and mentoring of junior officers are all considerations that require the guidance of officers with specific experience. If this were not true then we could just as easily merge infantry, artillery, tank, and amphibian tractor officers at the grade of Major, call them Combat Arms Officers, offer them no training, then randomly assign them throughout the Division.

Second, some of the units within the MACCS have very divergent missions requiring unique skills. Experience in the FMF does not necessarily mean that an officer will be well versed in the employment of the MACCS as a whole. In many cases there are officers who serve an initial tour in their agency, then go on to a second tour in their specialty relating to training or acquisition, or serve in a B-billet such as recruiting or recruit training. This is typically followed by resident Career Level School (CLS) then a second tour in the FMF. At this point, the Group Commander may be in need of an officer with this specialty and employ him right back to his original agency. With current promotion rates⁶⁰, this officer will be a Major shortly thereafter and will be expected to be a MACCS generalist.

The worst case scenario would be a unit with field grade officers who fit the career pattern described above assigned

to a unit in which none have experience. An example would be a LAAD battalion commanded by an Air Support Control Officer, with an Air Defense Control Executive Officer, and an Air Traffic Control Officer as the Operations Officer. This would leave a Captain, who may have no more than five years in the Marine Corps, as the most experienced LAAD officer in the unit.

In order to lessen the effects of this dilemma, commanders have routinely assigned senior officers to the units in which they have experience. At a minimum, the Operations Officer has typically come from the community. While this is a wise decision, it negates the generalist concept and relegates it to being nothing but a manpower management tool, making MOS 7202 "just a number."

In order to address the training deficiency, in 1999 Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) initiated the Air Command and Control Officers Course (ACCOC). It is a one-week course designed to

. . . provide the student with a thorough review of the duties required of an Operations Officer in a MACCS unit or in a staff billet requiring knowledge of all areas of the MACCS and joint operations.⁶¹

⁶⁰ Officers are currently promoted to Major with 9 to 9 1/2 years of service.

⁶¹ Commanding General, Marine Corps Combat Development Command, *Course Descriptive Data (CDD) for the Air Command and Control Officers Course*, 13 July 1999.

However, this course is offered as "refresher" training and is limited to Majors returning to the FMF after a non-fleet tour.⁶²

Because of normal career patterns, there is not enough time for an officer to gain experience in all facets of the MACCS. Therefore, creating a true generalist with extensive experience is unlikely. Only by providing thorough training, or implementing an aggressive cross-training assignment policy (which commanders are currently not required to do) can there be assurance that all MACCS officers will receive some level of broad experience.

⁶² Headquarters, Marine Corps (APC) Routing Sheet dated 23 June 1999.

5. Operational Initiatives

In December, 1999 the first of a three-part series, *The Marine Air Command and Control System and Operational Maneuver From The Sea (OMFTS) Part One: The Roadmap*⁶³, was published by HQMC outlining the direction for the MACCS of the future. It called for the MACCS to

- . . .transition into a modern, highly mobile, flexible, scalable capability built around:
 - The ability to influence the battlespace in real-time while accommodating the inventiveness and initiative of subordinates.
 - Real-time combat direction of aviation assets while providing situational awareness that supports intuitive decision-making.
 - The ability to generate a higher tempo of action than our enemy, support rapid power projection, and contribute to the creation of conditions necessary for decisive action.⁶⁴

Central to this transition is the fielding of the Common Aviation Command and Control System (CAC2S) in the near future. The CAC2S will modernize the capability of the MACCS to support the planning and execution of aviation operations for the MAGTF.

⁶³ Parts two and three have been changed to *The MACCS and Expeditionary Maneuver Warfare (EMW)*.

The CAC2S acquisition represents a modernization effort that will serve to remedy the operational, technical, and logistical deficiencies of the existing MACCS by replacing those legacy systems with a common suite of equipment. The system will not replace air defense weapons, radios, or sensors organic to the MACCS. It will allow for the consolidation of the existing functionality of legacy MACCS systems into a single system capable of performing those various functions with a common suite of equipment and software applications.⁶⁵

The CAC2S will provide operators with planning and execution capabilities that will interface with legacy MACCS systems, current MAGTF Command, Control, Communications and Intelligence (C4I) systems, jointly-mandated systems, and future Joint and MAGTF C4I systems. It will allow operators to execute current operations while simultaneously conducting planning for future operations. The intent is to ensure that the MACCS is capable of supporting MAGTF operations in both current and emerging operational environments.⁶⁶

The system will consist of common tactical shelters, hardware and software that will significantly reduce the logistical footprint of existing MACCS equipment suites. The

⁶⁴ *The Marine Air Command and Control System and Operational Maneuver From the Sea, Part One: The Roadmap* (Washington, DC: Headquarters, U.S. Marine Corps, Aviation Department, 15 December 1999), 5.

⁶⁵ Operational Requirements Document (ORD) for the Common Aviation Command and Control System (CAC2S) (Draft), 1.

⁶⁶ Draft ORD, 1.

hardware components will be modular and man-portable in transit cases.⁶⁷

The CAC2S will be employed in land, sea, or air transportable nodes. The components can be operated free standing, rack mounted in tactical or fixed shelters, mounted in High Mobility Multi-Purposed Wheeled Vehicle (HMMWV)-based mobile shelters, sea-based, or airborne. It will provide the means to scale capability up or down by arranging modules to meet mission requirements. Subsystems and modules will be assembled to create functional nodes that meet the required aviation command and control functional mission (i.e., Air Support, Air Defense, Air Traffic Control, Mission Planning, etc.) currently associated with a particular MACCS agency. The commander may assemble the subsystem's modules to provide the flexibility and capability required to satisfy the mission's complexity, anticipated threat, and mobility/transportation requirements.⁶⁸

The future employment concept for the MACCS using CAC2s is illustrated below.

⁶⁷ Ibid, 2.

⁶⁸ Ibid, 2-6.



Figure 5.⁶⁹

Technological trends like the CAC2S will drive MACCS force structure toward flattened, more effective, and more flexible command organizations, resulting in better overall coordination and reaction times. Specialized air control unit

⁶⁹ Ibid, 9.

organizations will evolve into cross-functional commands capable of multi-functional operations.⁷⁰

The future MACCS employment concept will focus on a Marine Expeditionary Brigade (MEB)-sized Capability Set tailored to support the operational tenets of EMW. Figure (6) illustrates the full range of MACCS operations that should be expected to support the ACE within any MEB-level MAGTF.

<u>Operational Facilities (OPFACs)</u>	<u>Sensors</u>
<ul style="list-style-type: none"> •Intelligence •ACE Planning •Combat Direction <ul style="list-style-type: none"> - Aircraft -Missiles •Air Control <ul style="list-style-type: none"> -Airspace Management -Airspace Control 	<ul style="list-style-type: none"> •Long Range Surveillance (RADAR) •Multi Role Surveillance (RADAR) <ul style="list-style-type: none"> - Sensor Netting - Elevated Platforms
<u>Weapons</u>	<u>Intelligence, Surveillance, and Reconnaissance (ISR)</u>
<ul style="list-style-type: none"> •Short Range Air Defense (SHORAD) 	<ul style="list-style-type: none"> •Air Reconnaissance (UAVs)

Figure 6.⁷¹

Although currently under development, the MACG will initially reconfigure to an organization very similar to that shown in figure (7). The primary objective is to create a unit that internally possesses the resources to carry out most of the functions of a MACCS MEB Capability Set in an EMW

⁷⁰ *The Marine Air Command and Control System and Operational Maneuver From the Sea, Part One*, 22.

⁷¹ *The Marine Air Command and Control System and Expeditionary Maneuver Warfare, Part Two: Employment Concepts* (Washington, DC: Headquarters, U.S. Marine Corps, Aviation Department, 27 March 2001), 8.

focused MAGTF. In other words, a MACCS unit that is largely self-contained and capable of conducting MEB operations without external support.⁷²

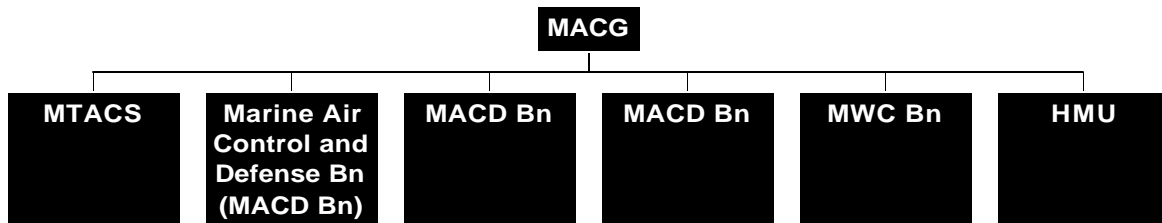


Figure 7.⁷³

As depicted in the figure each of the reorganized MACGs should have three Marine Air Control and Defense Battalions (MACD Bn). The units consolidated into this new battalion are the MACS, MASS, and LAAD Bn. Each of these "mirror image" MACD Bns will serve as the base unit for the deployment of a MACCS MEB Capability Set. Additionally, each MACD Bn will be comprised of companies as indicated below.⁷⁴

⁷² Draft, *The MAACS and EMW, Part Three: People, Organization, and Training*, 14.

⁷³ VMU is depicted as HMU based on predicted transition to a rotary wing UAV.

⁷⁴ Ibid.

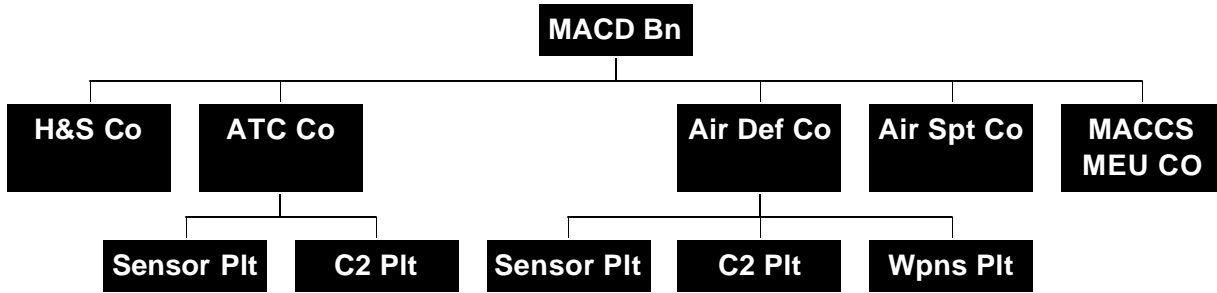


Figure 8.⁷⁵

This new structure is better suited to support EMW and will provide more leadership opportunities to both officers and enlisted Marines by creating platoons and companies within a battalion structure.⁷⁶ For officers in the MACS and MASS, the lack of command opportunities under the current squadron organization has always been an issue of great concern. Additionally, this structure affords commanders better flexibility in cross-training their junior officers and by design calls for generalists at the higher levels.

With the fielding of CAC2S and this new organizational structure, officers will be exposed to the various MACCS missions early on and, as they progress, will be required to employ the MACCS in a more flexible and responsive manner.

⁷⁵ Ibid.

⁷⁶ Ibid, 15.

Another initiative that may impact Air Command and Control Officers is the requirement for more seamless integration between air and ground information systems. As new technologies are developed and fielded, ground combat units are increasingly relying on information systems to provide real-time and near real-time information to assist commanders in making battlefield decisions.⁷⁷

In the future, Unit Operating Centers (UOCs) and MACCS agencies will evolve into MAGTF Operating Centers calling for generalists to plan and install a single integrated network. In order to ensure that these systems are developed with integration in mind, the UOC and CAC2S have been placed under the same program manager at Marine Corps Systems Command (MARCORSYSCOM).⁷⁸

This migration may eventually lead to the creation of a MAGTF Command and Control Officer, assignable to both air and ground units. This concept is currently being studied and, if implemented, will take several years to realize.⁷⁹ A potential problem with this concept is the possibility of too much focus on systems and less emphasis on aviation planning and execution. Without an operational focus we could simply be creating a large number of Communications/Information Systems

⁷⁷ Colonel Gary Lewis, USMC, Director, HQMC APC, telephone interview by the author 15 March 2002.

⁷⁸ Ibid.

⁷⁹ Ibid.

Officers whose duties would be even wider in scope than they are now.

6. Recommendations

A solution to the problem of how to best develop a generalist may lie in looking at another OccFld. In 1995, the intelligence community made significant changes to their officer MOS structure based on the Intelligence Master Plan.⁸⁰ Prior to that, all 0202 Intelligence Officers attended a 14-week course at the Navy and Marine Corps Intelligence Training Center (NMITC) in Dam Neck, Virginia. This was the beginning and end of their formal training, from which they went on to serve in a variety of billets throughout the MAGTF. Many times these billets required specific training and expertise that a generic officer, particularly a junior officer, did not possess. Additionally, a well-rounded generalist was required at the higher levels, yet there was no assurance that he had the necessary skills.

Their solution was to create several entry level MOS's for their junior officers. They are 0203: Ground Intelligence Officer, 0204: Human Source Intelligence Officer, 0206: Signals Intelligence/Ground Electronic Warfare Officer, and 0207: Air Intelligence Officer. These MOS's are assigned at The Basic School and, after initial training, Lieutenants are

⁸⁰ Major David A. Rababy, USMC. "Marine Corps Intelligence Officer Training in the Future." *Military Intelligence*, (October-December 1995): 33-35.

placed in the appropriate intelligence billets for their first tours. Upon selection to Captain and augmentation, these officers attend the MAGTF Intelligence Officers Course at NMITC and are designated 0202: MAGTF Intelligence Officer.⁸¹

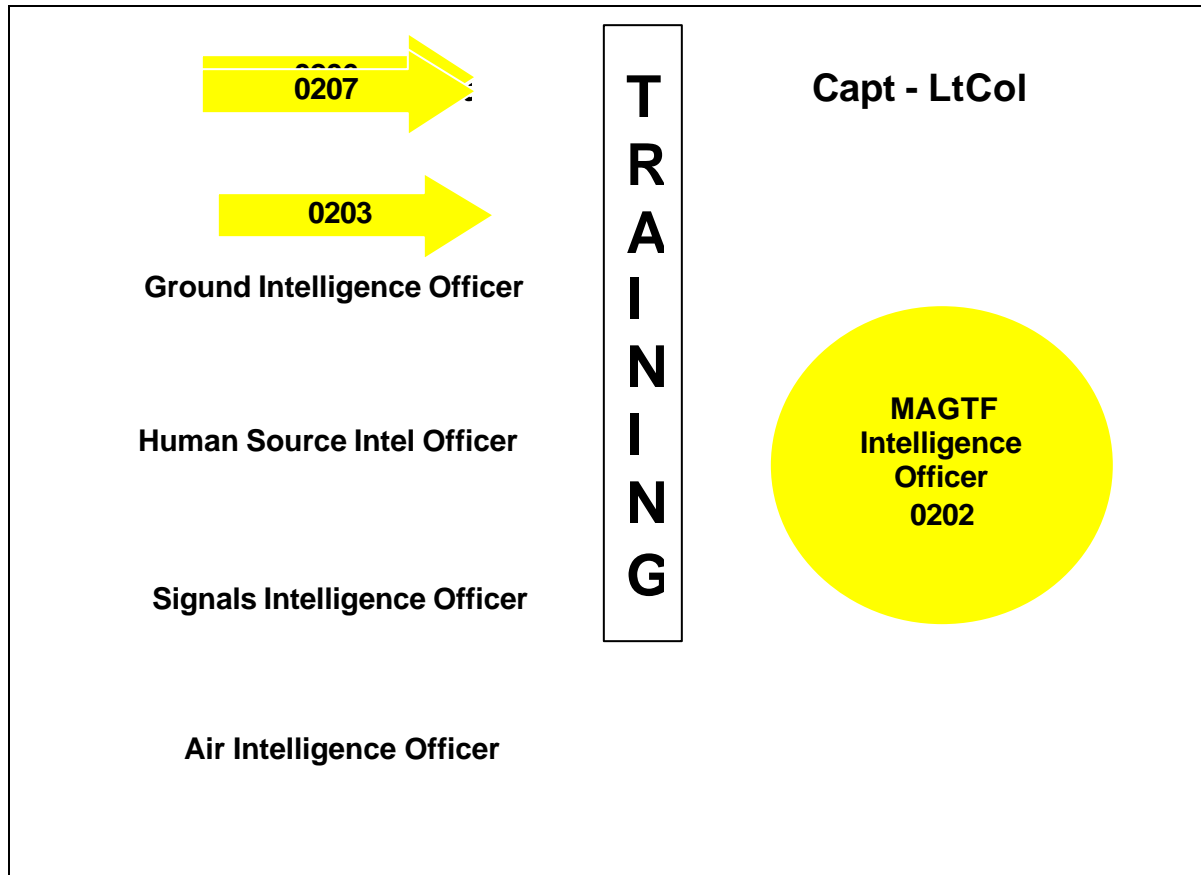


Figure 9.

The intent is to have all officers trained as generalists before they reach field grade. This system is more efficient because it produces junior officers with specific entry level

⁸¹ Ibid.

skills who can perform their duties during their initial assignments. It also provides a professionally trained Captain with current, broad-level knowledge of his OccFld as a whole and room to develop into a more seasoned field grade officer. The confidence and flexibility this system offers commanders cannot be overlooked.

In order to insure that the majority of students are senior Captains, a requirement to attend the course is completion of all company grade Professional Military Education (PME) requirements.⁸²

The Air Command and Control community would benefit greatly from following this model because it would base the 7202 designation on skills rather than on promotion. While neither model can ensure that an officer gains broad enough experience, providing follow-on training gives the officer a foundation from which to build upon.

For the near future, entry level officers should still be trained in a specific tactical MOS - these officers hold billets that require detailed knowledge of systems and tactics. With the current MACG structure and equipment, creating 7202 Second Lieutenants would require lengthy initial training, after which they may only serve in one MACCS agency

⁸² Captain William Wilburn, USMC, Company grade OccFld 02 Sponsor, telephone interview by the author on 4 January 2002.

before leaving the Corps or making a lateral move to an altogether new OccFld. This course would be long, wasteful, and technologically outdated by the time an officer reported to his second agency. With no follow-on training, we will produce a generation of amateurs throughout the MACCS.

Additionally, creating generalists from the start would push many of their responsibilities to enlisted Marines, requiring significant changes in their training and MOS structures. This requires a fundamental change in the way that most MACCS officers are trained and employed. Instead of requiring a junior officer to qualify in various operator/controller positions, they would be trained for and assigned to tactical leadership positions, and enlisted Marines would assume the majority of operator/controller positions. While our enlisted Marines are perfectly capable of assuming these new roles, such a change would require significant analysis with regard to enlisted training, career progression and grade structures.

Creating generalist Lieutenants would also pose a problem within the Air Traffic Control field. Currently these officers are required to maintain Federal Aviation Administration (FAA) certifications.⁸³ The initial training

⁸³ MCO P3500.19A, *Aviation Training and Readiness (T&R) Manual, Volume V, The Marine Air Command and Control System (MACCS)* (Washington, DC: Headquarters, U.S. Marine Corps, 1999).

time and required certification hours would make this an impractical solution. The alternative would be either to not require officers to maintain certifications like the Marines they lead, or bring back restricted officers to this field who would only focus on air traffic control.

Once the MACG is restructured and the CAC2S is fielded, training officers as generalists from the start may be a more viable option. The common equipment would facilitate a shorter course for new officers and technical skills would be retained through various assignments. Commanders will have more flexibility in assigning their junior officers and ensuring that they are exposed to a broader range of agencies. The new battalion structure will also make it more feasible to change responsibilities along leadership lines. However, this is a future solution that must be evaluated after the structure and equipment changes have been implemented.

In the interim, like the intelligence field, an advanced course must be made available to all officers and used as the basis for awarding the 7202 MOS. A good start would be to expand the ACCOC taught by MAWTS-1 and make it available to all qualified officers instead of limiting it to officers returning from non-FMF assignments.

This training should be initiated at the senior Captain level, providing an opportunity for the new 7202 to employ his

skills in a second agency and gain experience prior to promotion to Major. In order to keep the focus on senior Captains, prerequisites could include completion of PME, full combat qualification⁸⁴ in their primary MOS, or a combination of combat capable qualification⁸⁵ in more than one MOS, or designation as a Weapons and Tactics Instructor (WTI). Officers promoted to Major without completing the course would retain their primary MOS's and not be designated 7202's until completion.

⁸⁴ MCO P3500.19A, *Aviation T&R Manual, Volume V, The MACCS*.

7. Summary

Air Command and Control is a relatively new field. Evolving from a secondary duty for Naval Aviators into a highly complex primary field, it has gone through many reforms as technology and new threats evolve.

The need to coordinate all aviation functions, from close air support to directing ground based weapons, was a lesson learned on the battlefield resulting in what we know today as the MACCS. From the very beginning it was recognized that the officers who employ the MACCS would need to progressively understand how to employ it as a whole.

The need to develop such generalists is an issue that the Marine Corps has been wrestling with for many years. The establishment of the Air Command and Control MOS formalizes this development process, but bases it solely on promotion. By relating this process to training, the ambiguity is removed and a minimum baseline of knowledge can be expected of all field grade officers.

The Marine Corps will benefit from having a core of professional MACCS officers who can work effectively in any agency and who can advise MAGTF commanders on the system as a whole, as well as represent the MACCS in a joint environment.

⁸⁵ Ibid.

Current initiatives like CAC2S and the proposed MACG reorganization will move the MACCS toward cross-functional units with common equipment. This evolution further validates the need for generalists and will result in a more effective and flexible MACCS - a requirement that is in keeping with EMW.

While these initiatives may lead to a single officer MOS in the future, the need for specialization at entry level is still a requirement for MACCS officers. In the interim, following the example of the Intelligence field, the MACCS community should retain specialization for Second Lieutenants then provide advanced training to senior Captains in order to develop a well-rounded generalist.

Marine aviation is too important and information technology is too complex not to invest in the training of those officers tasked with leading the MACCS.

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